

Instructional Favoritism?
Field Dependence-Independence Does Not Consistently Predict Self-Perceptions or Teaching Preferences

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Abstract

The purpose of this study was to investigate salience of overt teaching biases among pre-service teachers. Psychological and self-reported characteristics and views were examined among 114 pre-service teachers to determine whether those characteristics and views were consistent with known tendencies associated with cognitive perceptual ability. Specifically, field dependence-independence, self-ratings, teaching preferences, locus of control, and tolerance for ambiguity were measured using standard instruments and likert scales. Generally, field dependence-independence levels did not predict corresponding self-perception items and constructs, with two notable exceptions: a) Self-perceived analytical ability was modestly related to field dependence-independence, and b) field dependent participants were more likely to be biased toward instructional pacing approaches than field independents. Overall, however, overt instructional favoritism was not strongly associated with the level of field dependence-independence, in contrast to what prior empirical findings suggest. In addition, the measurement of field dependence-independence provided a means to self-reflection that often contrasted with prior understandings of self among participants. The present findings have important implications for teacher education, understanding of teacher candidate characteristics, and further study of individual differences. These implications are described. (Contains 4 figures and 2 tables)

Keywords: Field Dependence-independence; Instructional Favoritism; Locus of Control; and Tolerance for Ambiguity

Introduction

Several decades of empirical research on cognitive perceptual ability using the field dependence-independence construct has yielded many useful findings concerning the ways that various types of contexts, instruction, and instructors differentially affect students (Jonassen & Grabowski, 1991; Riding, 1997; Tinajero & Paramo, 1997; Witkin, Moore, Goodenough, & Cox, 1977). With the variety of different approaches to both instruction itself and perspectives on the knowledge construction process comes a need for understanding how educators select instructional approaches to meet the many needs of the variety of learners in a class or other learning group. Many of the studies that examine student performance and their level of field dependence-independence indicated that some instructional approaches are likely to be more favorable toward field independent students over field dependent ones. In this study we examined the neglected question of whether field dependence-independence is likely to predict self-reported perceptions and tendencies that would support an instructional bias, or favoritism within learning environments. Following the work of Tinajero and Paramo (1997), we consider instructional favoritism to include a tendency to use teaching approaches that advantage some students at the expense of other students. In addition, drawing on decades of debate and analyses (Jonassen & Grabowski, 1991; Zhang, 2004) field dependence-independence is considered a perceptual ability rather than a cognitive style, whereby field independence represents higher analytical/perceptual ability than field dependence.

Frank (1986) found that teacher education students specializing in natural sciences, mathematics, business, and physical education tended to be more field independent than those specializing in social sciences, humanities, family and child development, home economics, special education, and speech pathology. Frank's findings involving teachers' career choices, in conjunction with many similar or related findings, raise a question about teaching and learning contexts: Do preferred teaching and learning contexts result in part due to self-perpetuating approaches to instruction and communication within those contexts? Or, as Tinajero and Paramo (1997) suggest:

It seems quite possible that the teaching methods and evaluation criteria inherent in existing educational systems are highly suited to information processing mechanisms of field independent students and, as a consequence, favour the achievement of field-independent children at the expense of their field-dependent classmates (p. 208).

In support of this notion of a general favoritism are the findings of Rickards, Fajen, Sullivan, and Gillespie (1997) wherein field dependents demonstrated a lack of awareness to use a structuring strategy while encoding text, but when prompted to take notes, were subsequently able to match field independents' recall levels for texts in a manner that showed a transfer of structure from one text to another text having the same overall structure. This outcome suggested a field dependent production deficiency, or knowing how to use a beneficial strategy, but not knowing when to use it, in contrast to a mediation deficiency of not knowing how or when to use the beneficial strategy (Flavell, Miller, & Miller, 1993). The production deficiency effects were eliminated with instruction that matched the field dependent's spectator oriented learning approach.

In the absence of appropriate instructional techniques for the field dependent students, the potential for field independence instructional favoritism is particularly notable in an era that allows standardized test scores to be used as a high-stakes indicator of the degree of improvement in a given child or educational setting.

Motivation and Personality

When examining field-dependence-independence, a consideration of other personal variables that are known to affect learning can provide needed context. Motivation factors and personality factors of both teachers and students are perceived within teacher-student relationships (Coward, Davis, & Wichern, 1978; Saracho & Spodek, 1986). Thus, the differences perceived between field dependents and field independents might involve mediating effects of motivational and personality characteristics on student learning. These possibilities are in need of investigation to help delineate the relative influences on student performances.

Reflection on Perceived Control By Teachers. Locus of control (Rotter, 1954, 1966) is one crucial motivational characteristic that involves one's perceived ability to exercise control, and answers the question, "To whom does the individual attribute success or failure?" Numerous studies have found that those with an internal rather than an external locus of control have higher learning achievement in various discipline areas (see Nunn & Nunn, 1993 for a review). Hence, locus of control can be seen as a relevant motivational variable that may have

mediating effects with field independence-dependence in any number of learning environments (Leventhal & Sisco, 1996).

Furthermore, several studies have shown the importance of locus of control relative to the job of teaching (Cheng, 1994; Sadowski, 1993). Measures of teacher burnout were significantly related to locus of control in one study (Lunenberg & Cadavid, 1992), accounting for up to approximately 10% of the variance in these relationships.

Reflection on Ambiguity Tolerance by Teachers. One of the many personality characteristics that are relevant to teaching is a person's tolerance for ambiguity. Tolerance for ambiguity involves a person's willingness to adapt to encounters with ambiguous situations or ideas (Ausburn, & Ausburn, 1978). Its importance to teaching relates to the earliest uses of the construct when Frenkel-Brunswik (1949) suggested that people intolerant of ambiguity tend to arrive at premature closure and tend to think concretely. Regarding Frenkel-Brunswik's assertion, Peters and Amburgey (1982) found that teachers with high tolerance for ambiguity tended to use higher cognitive levels of verbal responses in their teaching. Past research has also found a negative correlation between tolerance for ambiguity and field independence (i.e. lower ambiguity tolerance was associated with field dependence) among "high stress" college students (Williams, 1980).

Method

Participants: Pre-service teachers (n = 114) attending a medium size university in the southeastern United States volunteered for the study. Participants were primarily female (85%) between the approximate ages of 19 to 22 years. Specific age data were not collected. The independent variable was the score of field dependence-independence using the Group Embedded Figures Test (GEFT). Dependent variables were personal characteristics ratings, teaching preferences ratings, locus of control ratings (LOC), and tolerance for ambiguity ratings (MSTAT-I).

Instruments

The Group Embedded Figures Test (GEFT; Witkin, Oltman, Raskin, & Karp, 1971) was used to measure field independence-dependence. The GEFT measures field independence-dependence in a relatively objective manner in that it does not focus upon personal preferences (Riding, 1997).

Other individual differences were measured using multiple choice (7 teaching preferences) and likert scales (14 personal characteristics and learning preferences) previously associated with field dependence-independence (Jonassen & Grabowski, 1991; Witkin, Moore, Goodenough, & Cox, 1977), 7-step Likert scales of locus of control (LOC; Levenson, 1974; Ward, 1994) and 7-step Likert scales of tolerance for ambiguity (MSTAT-I; McLain, 1993).

The 14 personal characteristics likert scale ratings "Less analytical/More analytical," "Attentive to social cues/Inattentive to social cues," "Sociable/Individualistic," "Conventional and traditional/Experimental," "More influenced by format and structure/Less influenced by format and structure," "Affected by stress/Can ignore stress," "Not a risk taker/Risk taker," "Uncomfortable with uncertainty/Comfortable with uncertainty," "Do not easily recognize hidden patterns in pictures and designs/Easily recognize hidden patterns in pictures and designs," "Do not learn easily from reading text/Learn easily from reading text," "Do not learn well from verbal descriptions/Learn well from verbal descriptions," "Prefer to be taught or led by someone else/Prefer individualistic learning situations," "Prefer to receive notes developed by the teacher to study/Prefer to develop own notes when studying," and "Do not learn well from pictures and graphs/Learn well from pictures and Graphs." The multiple choice teaching preferences are shown in Table 2.

The LOC was a 9-item instrument derived from Levenson's (1974) scale using Ward's (1994) discriminant analysis that indicated an alpha reliability of .82 for the original scale. The MSTAT-I is McLain's (1993) original 22-item instrument that showed an alpha reliability of .86 within his discriminant validity investigation. In addition to reliability considerations, the LOC and the MSTAT-I were chosen because items on these instruments are not suggestive of socially desirable responses (Watkins, 1996).

Procedure

Within 30 minutes in a classroom environment, participants were asked by an experimenter to complete a four-part survey as follows: First, participants rated themselves on characteristics and learning preferences. Second, they were asked to provide their perspectives on the use teaching techniques. Third and fourth, they were asked to rate their agreement level on the scales of (a) locus of control (LOC), and (b) tolerance for ambiguity (MSTAT-I), respectively. Participants were instructed to answer questions "honestly," and to "skip items" that they did not want to respond to in order to help maximize the validity of responses.

After surveys were completed experimenters then administered the Group Embedded Figures Test (GEFT) of field dependence-independence to the participants. The GEFT requires approximately 5 minutes for the instruction and practice section and 10 minutes for the test sections.

Results

Reliability and Normality

Alpha reliability was measured for each of the three scales used. GEFT Alpha = .85. LOC Alpha = .76. MSTAT Alpha = .86. These levels were all considered acceptable for further analysis. Normality was assessed using the Shapiro-Wilk test. GEFT (.97, $p = .013$) and LOC (.95, $p = .001$) Shapiro-Wilk scores were significantly different than a normal distribution. MSTAT (.99, $p = .903$) did not differ from a normal distribution. Skewness tests indicated that GEFT scores were negatively skewed ($-.342$, $SE = .226$) but not more so than twice the standard error, and LOC scores were positively skewed to the right and more than twice the standard error ($.822$, $SE = .226$). Kurtosis tests showed that GEFT scores were less clustered with a shorter tail than a normal distribution ($-.528$, $SE = .449$), and LOC scores (1.425 , $SE = .449$) were more clustered with a longer tail than a normal distribution. Visual inspections of the normal plots were consistent with these normality statistics. Figure 1 illustrates the GEFT data distribution.

Insert Figure 1 about here

The skewness and kurtosis analyses on GEFT scores were used along with mean and median scores to test hypothesis 1: Field dependent-independent scores of pre-service teachers will tend to be normally distributed because of the various backgrounds and educational fields represented by these college students. The GEFT score mean was $M = 10.50$ ($SD = 4.38$), which is 1.5 units higher (more field independent) than the mid point score (9 on the 0-18 scale) on the GEFT. The median GEFT score was 11. The slight negative skew of the distribution did not fully support hypothesis 1, but the skewness test indicated that skew was not extreme, lending support for hypothesis 1. The GEFT yielded a nearly normal distribution of scores, supporting the relative diversity among participants on this construct.

Self Perceptions

Correlations between scores on the GEFT and participant ratings of their own characteristics were examined to test hypothesis 2: Self-perceptions will correspond with field dependent-independent related tendencies wherein field independence will be associated with individualistic self-perceptions while field dependence will be associated with more social self-perceptions. Odd numbered items on the instrument were reversed and these were reverse coded to establish a consistent interpretation of positive correlations (associated with field independence) and negative correlations (associated with field dependence).

Insert Figure 2 about here

Of the 14 characteristic dimensions examined, only one dimension "Less analytical/More analytical" was significantly correlated with field independence ($r = .23$, $p = .015$), as shown in Table 1. The other 13 dimensions yielded no significant correlation with field independence. ANOVA further indicated that field independents rated themselves significantly more analytical than field dependents, $F(1, 55) = 6.126$, $MSW = 2.89$, $p = .016$, $M = 3.68$, $SD = 1.85$ (field dependent), versus $M = 4.79$, $SD = 1.54$ (field independent), as illustrated in Figure 2. Overall, self-perceptions of the participants on 13 of 14 personal characteristics did not support prior findings on field independence-dependence tendencies, indicating little support for hypothesis 2.

Insert Table 1 about here

Control and Ambiguity

Correlations among scores on the GEFT, LOC, and MSTAT-I instruments were examined to test hypothesis 3: Relationships will exist between field dependence-independence, locus of control, and tolerance for ambiguity whereby (a) field independents will have a more internal locus of control and a higher tolerance for ambiguity than field dependents will and (b) ambiguity tolerance will be associated with an internal locus of control.

GEFT scores were not significantly correlated with LOC scores ($r = .15$) or MSTAT-I scores ($r = .05$), though LOC and MSTAT-I had a small significant correlation ($r = -.21$, $p = .03$) whereby participants with a more internal locus of control tended to have a higher tolerance for ambiguity, as predicted. In sum, sub-hypothesis "3-a" involving locus of control and tolerance for ambiguity relative to field dependence-independence was not supported, but sub-hypothesis "3-b" regarding the association between tolerance for ambiguity and locus of control was modestly supported by the negative correlation between LOC and MSTAT-I.

Teaching and Student Learning Preferences

Teaching preferences were examined relative to GEFT scores to test hypothesis 4: The tendency to commit to a particular teaching preference will be more strongly associated with field dependence due to their relatively lower analytical character while the tendency to avoid committing to a particular teaching preference will be more strongly associated with field independence due to their relatively higher analytical character.

Insert Table 2 about here

Table 2 shows that participants who chose either "no specific preference" or "not sure" rather than choosing a clear preference tended to be slightly more field-independent than participants who chose a clear preference. This tendency was supported by the direction of 4 of the 6 teaching preference questions that, but only at a statistically significant level for one of the six ("individualized vs. teacher guided") questions using ANOVA contrasts on GEFT score means, $F(3, 110) = 3.196$, $MSW = 18.15$, $p = .003$, $M = 9.54$, $SD = 4.36$ (preference), versus $M = 12.07$, $SD = 3.98$ (no preference or uncertain).

Participants were divided into three groups based upon their GEFT scores. One half of one standard deviation ($SD = 4.38$) above and below the mean score ($M = 10.50$) was used to determine the cutoffs for the field independent ($n = 29$, score > 13), field intermediate ($n = 57$; scores 8-13), and field dependent ($n = 28$; score < 8) groups. Chi Square for participants who were field dependent versus those who were field independent within each of the four possible responses supported the differences found for that question, $\chi^2(3, N = 57) = 8.87$, $p = .031$, and Cramer's $V = .395$, $p = .031$ indicated a significant, modest relationship. Figure 3 illustrates the stronger commitment of field dependents over field independents to using individualized or teacher-guided instructional approaches. A more stringent analyses collapsing preference categories and eliminating the field neutral group (Figure 4) supports the preference commitment by field dependent participants, $\chi^2(1, N = 57) = 8.19$, $p = .004$, and Cramer's $V = .379$, $p = .004$. Hypothesis 4 was strongly supported by one of six teaching questions and directionally supported by three more of the six teaching questions. Overall, hypotheses 4 was modestly supported.

Insert Figures 3 and 4 about here

Teaching preferences were also examined relative to GEFT scores to test hypothesis 5: There will be (a) differences among the teaching oriented preferences (b) that correspond with individualistic versus social tendencies respectively whereby field independents will tend to choose individualistic preferences and field dependents will tend to choose social preferences, when preferences exist.

Regarding sub-hypothesis "5-a" each of the six teaching preferences questions revealed differences among participants, as shown in Table 2. Differences included preferences on individualized (23.7%) versus self-paced (38.6%) instruction, mixed-ability (65.8%) versus same-ability (28.9%) grouping, teacher-organization (57.0%) versus student-organization (16.7%) of notes, complex and unstructured problems (14.4%) versus simple and structured problems (54.4%) to solve, and students' individualized goals (68.4%) versus students' cooperative goals (24.6%). In addition, a seventh preference question regarding grade level showed a difference in preferences for teaching preschool/elementary students (47.4%) versus teaching middle grades students (11.4%) versus teaching high school students (35.1%). Sub-hypothesis 5-a was well supported.

For all of the first six preference questions ANOVA indicated that there were no significant GEFT score differences between teaching oriented preferences that correspond with individualistic versus social tendencies. Furthermore, there was also no significant GEFT score difference between those who preferred to teach elementary students, where teachers are typically content generalists who often focus on early student development, versus those who preferred to teach high school students, where teachers are typically more specialized within a content

area and often focus on individual study needs. However, Table 2 shows that mean GEFT scores were in the hypothesized direction for 5 of 7 teaching preference questions. In parallel with the findings involving general self-perceptions, there was not a statistically significant pattern of GEFT score differences relative to teaching preferences. Sub-hypothesis 5-b was not strongly supported.

Discussion

Generally, field independence-dependence was not a reliable predictor of pre-service educators' self-perceptions, teaching preferences, locus of control, or ambiguity tolerance. Using the investigation approaches described here, field dependence-independence level did not appear to strongly bias the participants' particular points of view on teaching and learning. However, the exceptions to this overall outcome are worth highlighting for future investigations and for practical implications.

Self-Awareness and Instructional Pace

Two exceptions to the study's general outcome involved a) field independents' analytical self-perceptions, and b) field dependents' greater relative bias toward both self-paced and teacher-paced instructional approaches. Educators' self-awareness of their relative analytic ability could be a valuable means to understanding students who are similar and dissimilar to them. This analytic self-awareness would be of particular interest in light of the finding that participants who committed to an instructional pacing approach were more field dependent than those who did not commit to an instructional pacing preference. Hence one's analytic self-awareness may be seen as an initial means to highlighting educators' possible risk of being biased toward an instructional pacing approach that is less optimal for some students when only that approach is used. Thus, the instructional pacing bias will be investigated in subsequent studies.

Control and Ambiguity

Field dependence-independence had no significant relationship or influence on participants' perceptions of control as measured by the LOC, in contrast with Levanthal and Sisco's (1996) finding. Still, the skewed LOC distribution suggested that these participants as a whole had a more internal rather than an external locus of control ($M = 2.92$ out of 7) with only 8.7% of participants reflecting an external locus of control.

Similarly, field dependence-independence did not show a relationship to participants' tolerance for ambiguity, as measured by MSTAT-I, in contrast with William's (1980) finding. The relatively normal distribution of the MSTAT-I scores illustrates notable variability among this participant sample in their perspectives on ambiguous situations. Additionally, the small correlation between locus of control and tolerance for ambiguity indicates an expected degree of consistency between the constructs while supporting their relative independence as unique constructs. This correlation represents a new finding that will also be investigated in subsequent studies.

Limitations of the Sample and Measures

Participants were primarily from the southeastern United States, many from rural communities, where particular cultural, environmental, and economic factors may influence to the results of the outcomes. In addition, while the sample size of 114 allowed for sufficient power to meaningfully analyze the potential associations among variables, a larger more broadly representative sample would allow for greater generalization of results. In addition, the sample was 85% female, reflective of the teacher-candidate population at the institution where the study was held, though the sample of participants cannot be considered representative of all pre-service teachers. Likewise, the participants' views and abilities cannot be assumed to correspond with those of certified practicing teachers who have considerable training and experiences.

Conclusion

The present study and its hypotheses addressed applied questions related to teacher education and individual differences. Here we address three major questions using what we have interpreted from this participant sample and these initial findings. Some of the findings represent important null effects. In general we suggest that additional approaches and participant samples also be used to further address these questions.

- Do pre-service teachers' views indicate instructional favoritism? This evidence suggests: No. While bias toward instructional pacing approaches among field dependents is evident, in most cases an overt favoritism was not consistently revealed by these self-reports.

- Do pre-service teachers' self-reflections reveal the same tendencies suggested by tests of field independence-dependence? This evidence suggests: Not usually. Our data suggest that self-ratings did not correspond well with scores on a test of field independence-dependence and associated tendencies, with one exception ("analytical").
- Should teachers be formally assessed to help them more broadly reflect upon their own potential cognitive biases? This evidence suggests: Yes. By having their own field dependence-independence assessed, many participants were provided with feedback regarding one aspect of their own perceptual/analytical character that apparently contrasted with their self-awareness. This awareness could allow a more informed reflection on student differences and potential limitations of instructional practices.

Useful approaches to stimulating teacher reflection upon individual differences exist beyond the field dependence-independence construct (see Zhang, 2004). However, as a reliably assessed individual difference measure that has a long history of research involving important educational outcomes, the field independence-dependence construct has a favorable cost-benefit ratio for meaningful use within teacher education programs. Meaningful use should include careful discussion of the limitations of such standardized assessments and the potential for counterproductive labeling or instructional matching of students that can result from uncritical considerations of learning constructs and contexts.

References

- Ausburn, L. J. , & Ausburn, F. B. (1978). Cognitive Styles: Some information and implications for instructional design. Educational Communications and Technology Journal, 26, 337-354.
- Cheng, Y. C. (1994). Locus of control as an indicator of Hong Kong teachers' job attitudes and perceptions of organizational characteristics. Journal of Educational Research, 87(3), 180-188.
- Coward, R. T., Davis, J. K., & Wichern, R. O. (1978). Cognitive style and perceptions of the ideal teacher. Contemporary Educational Psychology, 3(3), 232-238.
- Flavell, J. H., Miller, P. H., & Miller, S. A. (1993). Cognitive development. Engelwood, NJ: Prentice Hall.
- Frank, B. M. (1984). Effect of field independence-dependence and study technique on learning from lecture. American Educational Research Journal, 21, 669-678.
- Frenkel-Brunswick, E. (1949). Intolerance for ambiguity as an emotional and perceptual personality variable. Journal of Personality, 18, 108-143.
- Jonassen, D. H. & Grabowski, B. L. (1991). Handbook of individual differences, learning, and instruction. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Levenson, H. (1974). Activism and powerful others: Distinctions within the concept of internal-external control. Journal of Personality Assessment, 38, 377-383.
- Leventhal, G. & Sisco, H. (1996). Correlations among field dependence/independence, locus of control and self-monitoring. Perceptual and Motor Skills, 83, 604-606.
- Lunenburg, F.C. & Cadavid, V. (1992). Locus of control, pupil control ideology, and dimensions of teacher burnout. Journal of Instructional Psychology, 19(1), 13-23.
- McLain, D. L. (1993). The MSTAT-I: A new measure of an individual's tolerance for ambiguity. Educational and Psychological Measurement, 53, 183-189.
- Nunn, G.D. & Nunn, S.J. (1993). Locus of control and school performance: Some implications for teachers. Education, 113(4), 636-641.
- Peters, W. H. & Amburgey, B. S. (1982). Teacher intellectual disposition and cognitive classroom verbal interactions. Journal of Educational Research, 76, 94-99.
- Rickards, J.P., Fajun, B. R., Sullivan, J. F., & Gillespie, G. (1997). Signaling, notetaking, and field independence-dependence in text comprehension and recall. Journal of Educational Psychology, 89(3), 508-517.

- Riding, R. J. (1997). On the nature of cognitive style. Educational Psychology, 17(1), 29-50.
- Rotter, J. B. (1954). Social Learning and Clinical Psychology. Englewood Cliffs, NJ: Prentice Hall.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs: General and Applied, 81(1), 1-28.
- Sadowski, C. J. (1993). Cumulative evidence of the relationship between work tenure and generalized locus of control among teachers. Education, 114(1), 27-31.
- Saracho, O. N. & Spodek, B. (1986). Matching preschool children's and teacher's cognitive styles, Perceptual and Motor Skills, 78, 683-689.
- Tinajero, C. & Paramo, M. F. (1997). Field dependence-independence and academic achievement: a re-examination of their relationship. British Journal of Educational Psychology, 67, 199-212.
- Ward, E. A. (1994). Construct validity of need for achievement and locus of control scales. Educational and Psychological Measurement, 54, 983-993.
- Watkins, D. (1996). The influence of social desirability on learning process questionnaires: A neglected possibility? Contemporary Educational Psychology, 21, 80-82.
- Williams, R. A. (1980). The relationship between field independence, tolerance of ambiguity and stress in undergraduate nursing students (Doctoral Dissertation, University of Washington). Dissertation Abstracts International, 41(07), 3121.
- Witkin, H.A., Moore, C.A., Goodenough, D.R., & Cox, P.W. (1977). Field dependent and field independent cognitive styles and their educational implications. Review of Educational Research, 47(1), 1-64.
- Witkin, H. A., Oltman, P., Raskin, E., & Karp, S. (1971). A Manual for the Embedded Figures Test. Palo Alto, CA: Consulting Psychologists Press.
- Zhang, L. (2004). Field-dependence/independence: cognitive style or perceptual ability?—validating against thinking styles and academic achievement. Personality and Individual Differences, 37, 1295-1311

Table 1

Correlations Between Group Embedded FiguresTest (GEFT) Scores and Self-Ratings

	n = 114
<u>Self-Rating</u>	<u>GEFT</u>
Analytical	.23 *
Social Cues Inattentiveness	.05
Not Influenced by Format	-.03
Not Affected by Stress	.04
Risk Taker	-.03
Comfort with Uncertainty	.07
Recognize Hidden Patterns	.15
Learn Easily from Reading	-.06
Learn Well from Verbal	-.07
Learn Well From Pictures	.04
Individualistic	.03
Experimental	.06
Prefer One's Own Notes	-.05
Prefer Individualistic Learning	.04

Note. * Correlation is significant at the .05 level (2 tailed).

Table 2. Teaching Preference Questions, Response Percentages of Sample, and Means/Standard Deviations on the Group Embedded Figures Test (GEFT) by Question Response.

Which of the following type of instruction would you most prefer to use with students?

<u>Choices</u>	<u>% n</u>	<u>GEFT</u>	
		<u>M</u>	<u>SD</u>
(1) individualized, self-paced instruction	23.7	9.5	3.9
(2) teacher-guided and teacher-paced instruction	38.6	9.5	4.7
(3) no specific preference	17.5	12.3	4.4
(4) not sure	20.2	11.9	3.7

Which of the following grouping approaches would you most prefer to use with students?

<u>Choices</u>	<u>% n</u>	<u>GEFT</u>	
		<u>M</u>	<u>SD</u>
(1) placing mixed-ability students together in cooperative groups	65.8	10.4	4.1
(2) placing same-ability students together in cooperative groups	28.9	10.8	5.0
(3) no specific preference	0.0		
(4) not sure	5.3	9.3	4.3

Which of the following organizational approaches would you most prefer to use with students?

<u>Choices</u>	<u>% n</u>	<u>GEFT</u>	
		<u>M</u>	<u>SD</u>
(1) presenting teacher-organized class notes to students	57.0	9.7	4.3
(2) allowing student-organization of class notes	16.7	10.6	4.6
(3) no specific preference	19.3	12.2	4.2
(4) not sure	7.0	12.0	3.5

Which of the following problem types would you most prefer to use with students?

<u>Choices</u>	<u>% n</u>	<u>GEFT</u>	
		<u>M</u>	<u>SD</u>
(1) using relatively unstructured, complex problems for students to solve	14.9	11.6	2.9
(2) using relatively straightforward, simple problems for students to solve	54.4	9.7	4.7
(3) no specific preference	21.9	11.5	4.7
(4) not sure	8.8	11.1	2.6

Which of the following types of goal setting would you most prefer to use with students?

<u>Choices</u>	<u>% n</u>	<u>GEFT</u>	
		<u>M</u>	<u>SD</u>
(1) having students set individualized goals for achievement	68.4	10.9	3.8
(2) having students set cooperative goals for achievement	24.6	9.4	6.0
(3) no specific preference	4.4	10.4	0.5
(4) not sure	2.6	10.7	4.2

Which of the following assessment questions would you most prefer to use with students?

<u>Choices</u>	<u>% n</u>	<u>GEFT</u>	
		<u>M</u>	<u>SD</u>
(1) assessment questions that ask about information as it was presented during instruction	77.2	10.3	4.5
(2) assessment questions that ask about information in ways that are different from instruction	13.2	10.5	4.8
(3) no specific preference	5.3	11.2	1.9
(4) not sure	4.4	12.6	4.0

Which of the following group of students would you most prefer to teach?

<u>Choices</u>	<u>% n</u>	<u>GEFT</u>	
		<u>M</u>	<u>SD</u>
(1) preschool or elementary school students	47.4	10.5	4.2
(2) middle grades students	11.4	9.6	3.8
(3) high school students	35.1	11.2	4.7
(4) college or other adult students	6.1	8.0	4.9

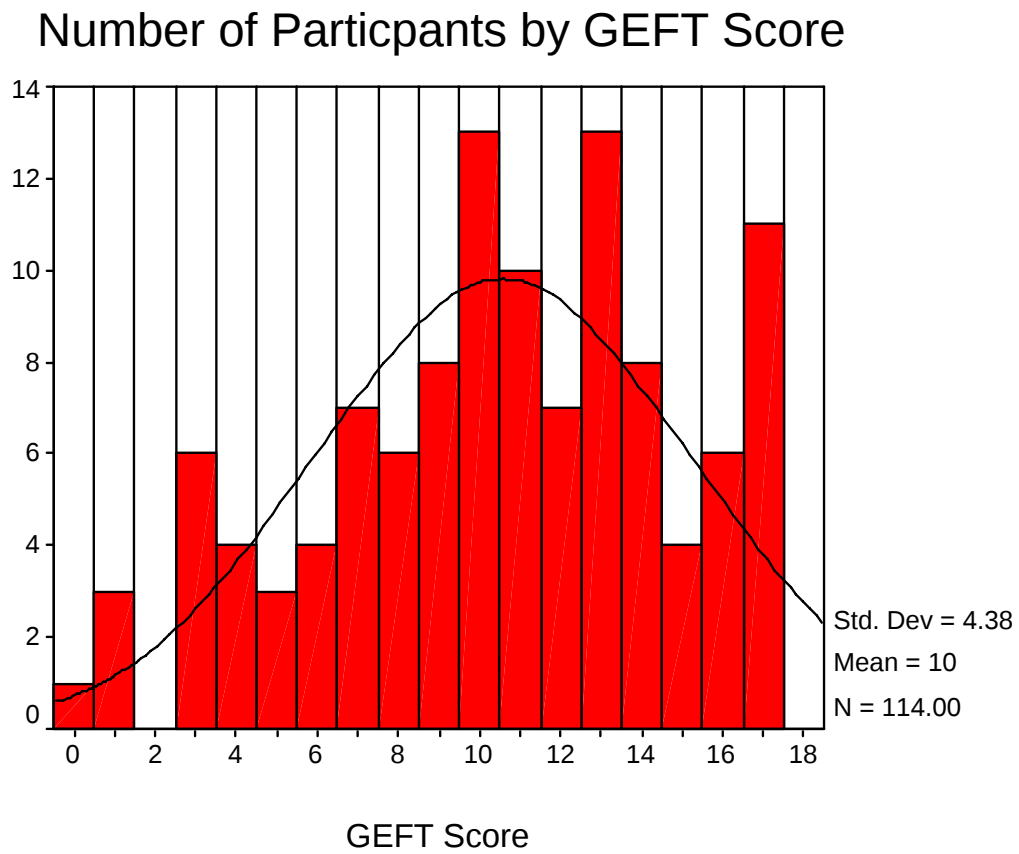


Figure 1. Distribution of Scores on the Group Embedded Figures Test (GEFT) of Field Independence-Dependence.

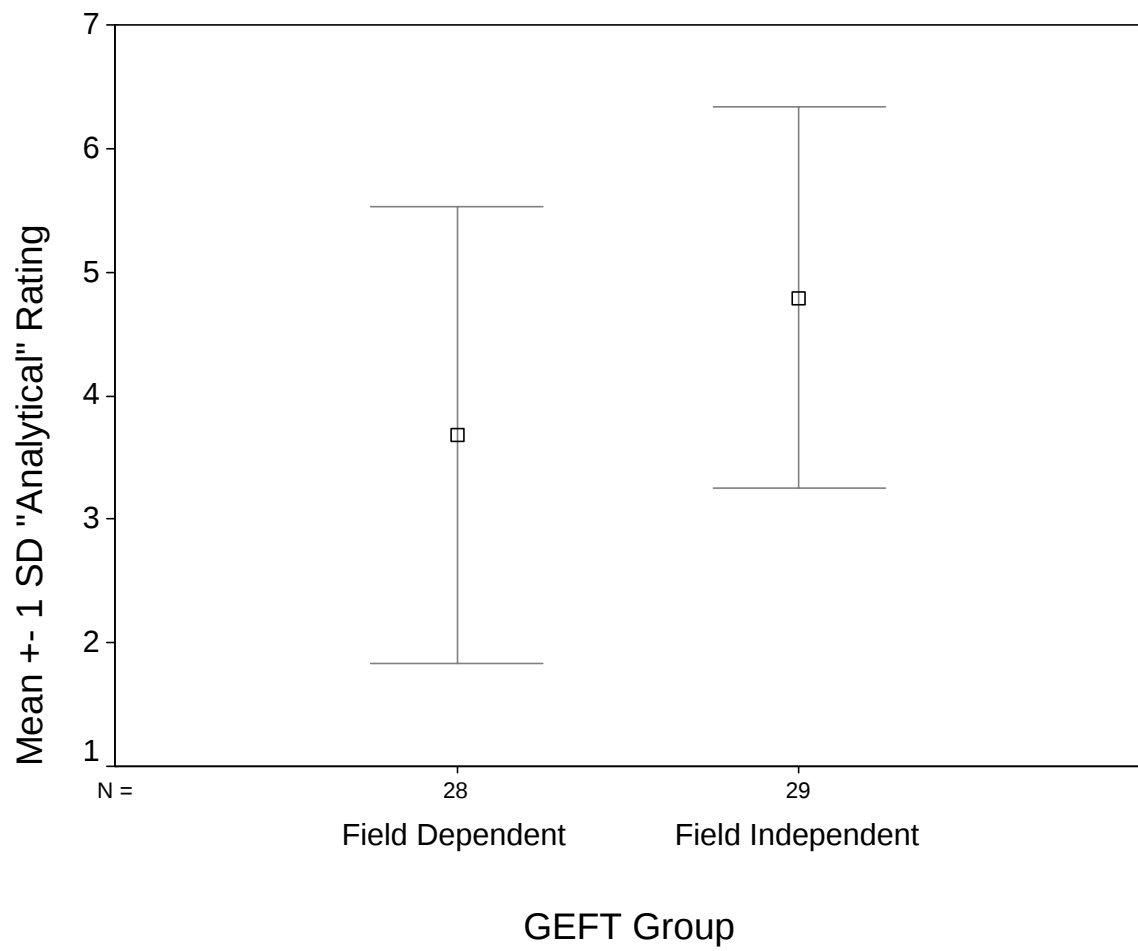
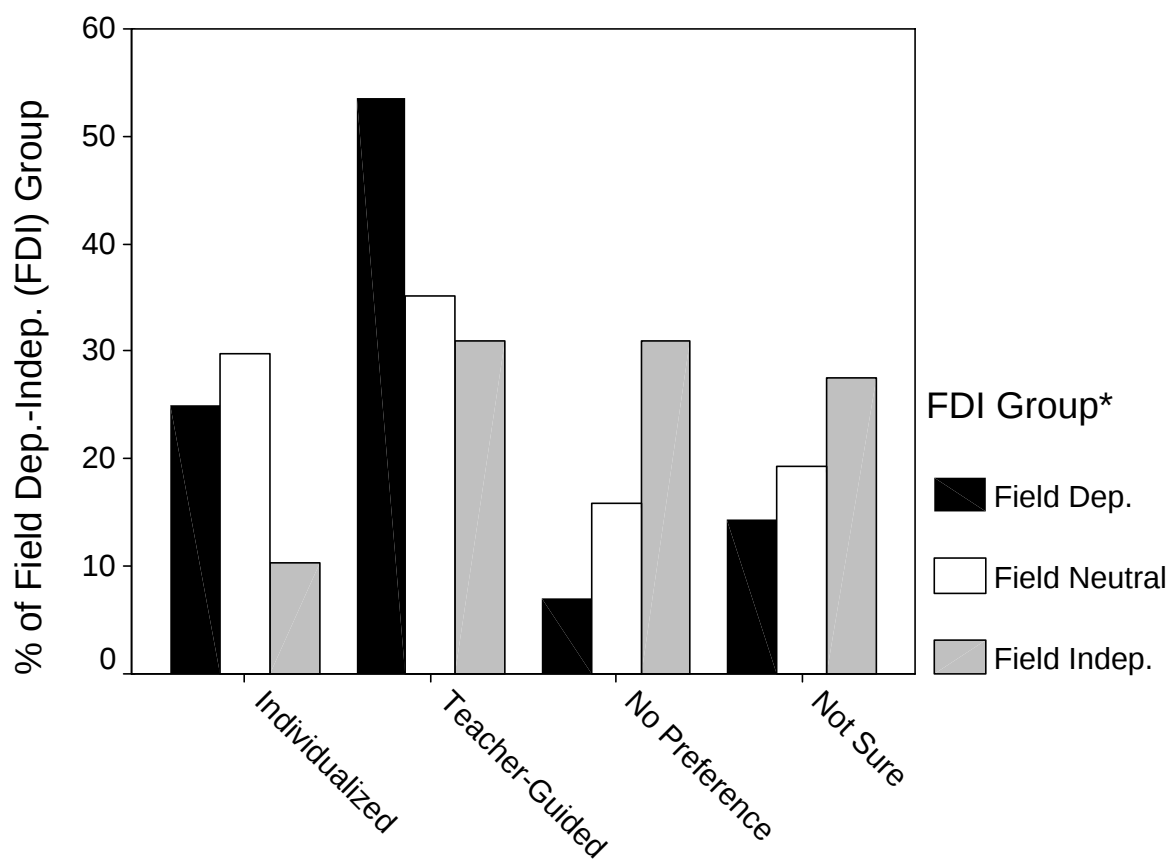


Figure 2. Mean Ratings on “More Analytical/Less Analytical” By Group Embedded Figures Test (GEFT) Category.



Preferred Instruction to Use With Students

Figure 3. Percentage of Subjects in each Field Dependent-Independent Group by Type of Instructional Pacing Preferred for Use With Students. For Field Dependence versus Field Independence, $\chi^2 (3, N = 57) = 8.87, p = .031$, and Cramer's $V = .395, p = .031$.

Note. *Field Dependent Group $n = 28$, Field Neutral Group $n = 57$, and Field Independent Group $n = 29$.

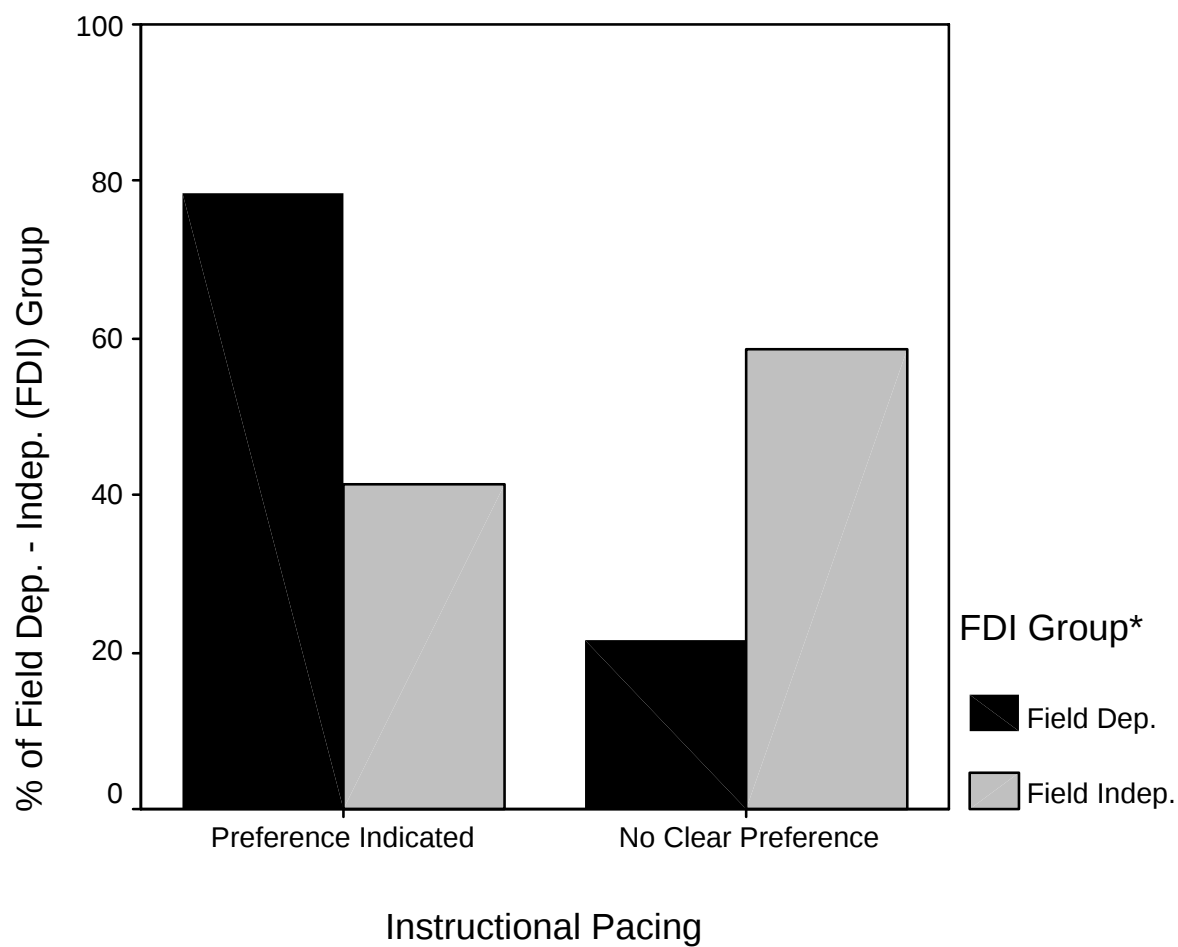


Figure 4. Percentage of Subjects in Two Field Dependent-Independent Groups by Instructional Pacing Preference Group. For Field Dependence versus Field Independence, $\chi^2(1, N = 57) = 8.19, p = .004$, and Cramer's $V = .379, p = .004$.

Note. *Field Dependent Group $n = 28$ and Field Independent Group $n = 29$.